

**CLAIMS**

1. Device for connecting two or more cable ends, wherein each of the cable ends is constructed from at least a core, an insulating sheath and an earth shield, which device comprises:

- 5 - an insertion bush for inserting the two core ends,  
- an insulator arranged around the insertion bush,  
- a conductive layer, wherein in use the conductive layer is disposed in order to provide electrical contact  
10 between the two earth shields,  
**characterized in that** fixing means are provided for fixing the cable ends to the device;  
and that in use the insertion bush connects against the cores of the cable ends to provide conductive contact  
15 between the cores, and in use the insulator and the conductive layer connect almost or wholly to respectively the insulating sheaths and the earth shields of the cable ends.

2. Device as claimed in claim 1 for connecting two  
20 or more cable ends provided with a field control sheath arranged round the insulating sheath, the device comprising a field control layer provided round the insulator for controlling the electrical field between the field control sheaths, wherein the conductive layer  
25 is arranged round the field control layer and in use the insulator, the field control layer and the conductive layer almost or wholly connect to respectively the insulating sheaths, the field control sheaths and the earth shields of the cable ends.

30 3. Device as claimed in claim 2 for connecting two or more cable ends also containing a protective sheath, wherein the device comprises a protective sleeve for almost or wholly connecting the insulator, the field

control layer, the conductive layer and the protective sleeve during use to respectively the insulating sheaths, the field control sheaths, the earth shields and the protective sheaths of the cable ends.

5       4. Device as claimed in any of the foregoing claims, wherein the insertion bush, the insulator, the field control layer, the conductive layer and the protective sleeve are integrated into one element.

10      5. Device for connecting a stripped cable end to an end element, wherein the cable is at least constructed from a core, an insulating sheath and an earth shield, which device comprises:

- an insertion bush for inserting the core end;
  - a sleeve-shaped insulator arranged around the
- 15 insertion bush;

**characterized in that**

fixing means are provided for fixing the cable end to the device, and that in use the insertion bush connects against the core so as to provide electrical contact  
20 between the core and the end element, and in use the insulator connects almost or wholly to the insulating sheath of the cable.

6. Device as claimed in claim 5 for connecting to the end element a cable with a field control sheath  
25 arranged round the insulating sheath, the device comprising a field control layer arranged on a part of the inner surface of the insulator, wherein in use the insulator almost or wholly connects to the insulating sheath of the cable and the field control layer almost  
30 or wholly connects to the field control sheath of the cable.

7. Device as claimed in claim 5 or 6, wherein the insulator also connects to the earth shield of the cable.

8. Device as claimed in claim 5, 6 or 7, wherein the insertion bush, the field control layer and the insulating sheath are integrated into one element.

9. Device as claimed in any of the foregoing 5 claims, wherein the insertion bush comprises clamping means for fixedly clamping the inserted core ends.

10. Device as claimed in claim 9, wherein the clamping means engage on the inserted core ends and the fixing means engage on at least one of the earth shield, 10 the insulating sheath and the field control sheath.

11. Device as claimed in claim 9 or 10, wherein the clamping means are adapted to provide a relatively low resistance to a movement of core end in insertion direction and to provide a relatively high resistance to 15 movement in the opposite direction.

12. Device as claimed in claim 11, wherein the clamping means comprise a number of lips extending obliquely in the insertion direction.

13. Device as claimed in claim 1 or 5, wherein the 20 fixing means comprise a sleeve which is arranged round the conductive layer and shrinkable at least in radial direction.

14. Device as claimed in claim 13, wherein the shrinkable sleeve is manufactured from a heat-activated 25 plastic.

15. Device as claimed in claim 14, wherein the fixing means also comprise heating means provided in or close to the shrinkable sleeve to cause the shrinkable sleeve to shrink through heat.

30 16. Device as claimed in claim 15, wherein the heating means comprise at least one resistance wire arranged on the shrinkable sleeve.

17. Device as claimed in any of the claims 13-16, wherein the shrinkable sleeve is formed by the 35 protective sleeve.

18. Device as claimed in any of the foregoing claims, wherein the fixing means comprise a tube which is arranged around the conductive layer and which is compressible in at least radial direction.
- 5 19. Device as claimed in any of the foregoing claims, wherein the fixing means comprise an elastic sleeve arranged around the conductive layer.
- 10 20. Device as claimed in any of the foregoing claims, wherein the fixing means comprise a sleeve which is arranged around the conductive layer and both outer ends of which have a tapering form for fixing the cable end with the outer ends.
- 15 21. Device as claimed in any of the foregoing claims, wherein the conductive layer is compressible at least in radial direction.
22. Device as claimed in any of the foregoing claims, wherein the insulator extends in longitudinal direction beyond the insertion bush.
- 20 23. Device as claimed in any of the foregoing claims, wherein the field control layer extends in longitudinal direction beyond the insulator.
- 25 24. Device as claimed in any of the foregoing claims, wherein the conductive layer extends in longitudinal direction beyond the field control layer.
- 25 25. Device as claimed in any of the foregoing claims, wherein the protective sleeve, in the inserted situation, extends in longitudinal direction beyond the end of the stripped part of the cable end.
- 30 26. Device as claimed in claim 25, wherein the fixing means are at least provided close to the outer ends of the protective sleeve.
- 35 27. Device as claimed in any of the foregoing claims, which comprises at least one removable spacer for holding the conductive layer at a predetermined diameter.

28. Device as claimed in any of the foregoing claims, wherein spring means are arranged around the conductive layer in order to compress this layer in radial direction.

5 29. Method for mutually connecting at least two cable ends, which cable ends each comprise at least a core, an insulating sheath and an earth shield, which method comprises the steps of:

- providing a connecting device comprising at least
- 10 an insertion bush with an insulator therearound and a conductive layer;
- stripping each cable end in stepwise manner;
- successively inserting each core end into the device;

15 characterized by

- inserting the cable ends in the device until the cores connect against the insertion bush in order to provide conductive contact between the cores of the different cable ends and until the insulator and the
- 20 conductive layer almost or wholly connect to respectively the insulating sheaths and the earth shields of the cable ends; and
- fixing the cable ends relative to the connecting device.

25 30. Method as claimed in claim 29 for connecting cable ends also containing a field control layer and/or a protective sheath, which method comprises of:

- providing a connecting device comprising at least an insertion bush, an insulator, a field control layer,
- 30 a conductive layer and preferably a protective sleeve;
- inserting the cable ends until the cores connect against the insertion bush and the insulator and until the field control layer, the conductive layer and the protective sleeve almost or wholly connect to
- 35 respectively the insulating sheaths, field control

sheaths, earth shields and preferably the protective sheaths of the cable ends.

31. Method for connecting to an end element one or more cable ends comprising at least a core, an

5 insulating sheath and an earth shield, which method comprises the steps of:

- providing an end element comprising at least an insertion bush, a connecting end (31) connected thereto and a sleeve-like insulator;

10 - attaching the device to the end element;

- stripping each cable end in stepwise manner;

- successively inserting each core end into the device;

**characterized by**

15 - inserting the cable ends in the device until the cores connect against the insertion bush in order to provide conductive contact between the cores and the connecting end (31) and until the insulator connects to the insulating sheaths of the cable ends; and

20 - fixing the cable ends relative to the connecting device.

32. Method as claimed in any of the claims 29-31, wherein the fixing comprises of at least partly heating a component of the connecting device made from

25 shrinkable material.

33. Method as claimed in any of the claims 29-32, wherein conducting contact between the cable ends is provided by only inserting the cable ends.

34. Method as claimed in any of the foregoing

30 claims 29-33, comprising of removing a spacer whereby the conducting contact between the cable ends is provided.

35. Method as claimed in any of the foregoing claims 29-34, wherein the earth shield is folded over

35 after the stepwise removal of the different layers.

36. Method as claimed in claim 35, comprising of placing a sleeve between the cable end and the folded earth shield in order to prevent the earth shield being pressed into the cable end.

5 37. Method as claimed in any of the claims 29-36, comprising of, for different cable diameters, stripping at least a part of the insulating sheath to a substantially constant diameter.

10 38. Method as claimed in claim 37, comprising of stripping the insulating sheath such that a conical transition results between said part of the insulating sheath and the field control sheath.

15 39. Method as claimed in any of the foregoing claims, comprising of clamping a core end of the insertion bush and fixing at least the earth shield, the insulating sheath, the field control sheath and the protective means.

20 40. Method as claimed in any of the claims 29-39, wherein the connecting device is the device according to any of the claims 1-28.